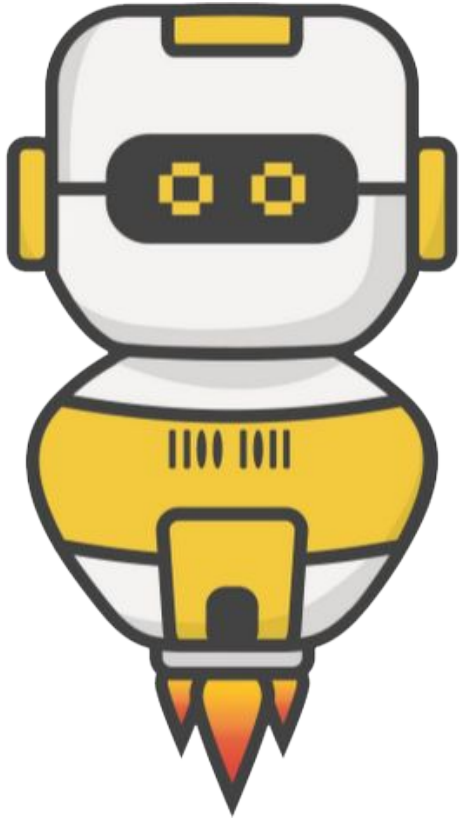
# Mission 3 Remix

Create your own project from Mission 2 and Mission 3

# Pre-Mission Preparation

In the Mission 3 Remix Log, answer the pre-mission preparation questions:

- What are some things you have learned to do with the CodeX?
- What does a ‘remix’ mean to you?



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# Have you heard of music remixes?

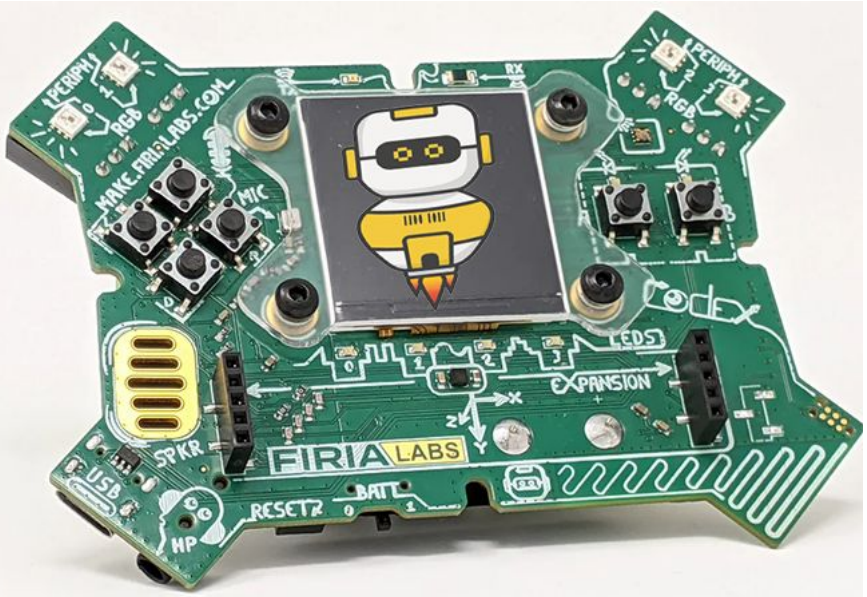
It is when someone takes parts of a song, or several songs, and combines them with some original music to create something original

- You can combine two or more songs as part of a remix
- Something new is created by combining parts of songs and adding new music with the parts

# Project Remixes

You can do the same thing with your mission projects!

- A new program is created by adding new code and using parts of code from programs you already created
- You can combine parts of two or more programs in a remix

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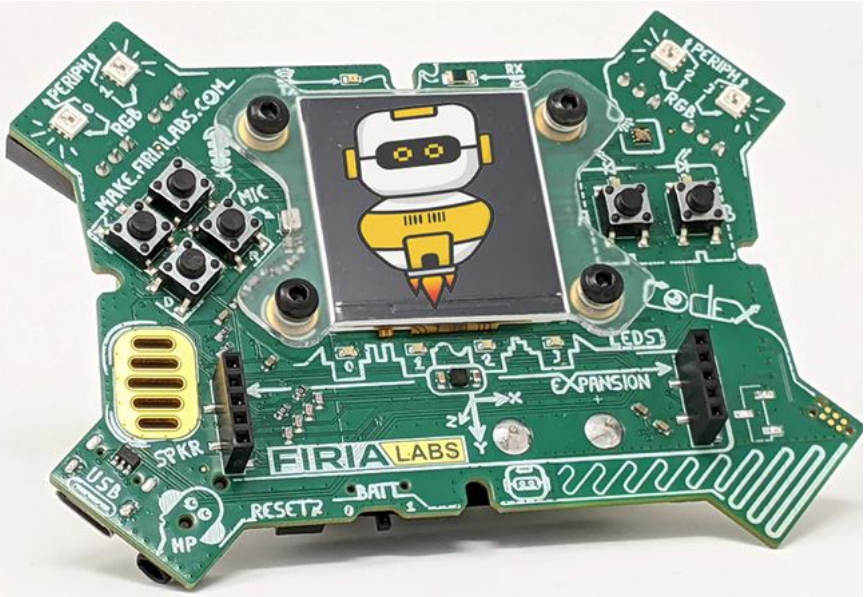
# Project Remixes

Creating a remix of your projects will let you:

- Use the skills and practice the concepts from the missions
- Be creative
- Improve your understanding of programming
- Collaborate with other students
- Design an original program and write the code all on your own

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# Step #1

## Review projects and concepts

- Open your projects from Mission 2 & Mission 3
  - Review what the program does
  - Review the programming concepts and skills used

DO THIS:

- Fill out the information in the Mission 3 Remix Log for **Step 1**

Heart1 | Pixels1

```
1  from codex import *
2  display.show(pics.MUSIC)
3
```

Heart1 | Pixels1

```
1  from codex import *
2  from time import sleep
3
4  delay = 1
5
6  color = RED
7  pixels.set(0, color)
8  pixels.set(1, color)
9  pixels.set(2, color)
10 pixels.set(3, color)
11 sleep(delay)
12
13 color = YELLOW
14 pixels.set(0, color)
15 pixels.set(1, color)
16 pixels.set(2, color)
17 pixels.set(3, color)
18 sleep(delay)
19
```

# Step #2

## Brainstorm ideas

For this first remix, you will use RGB to display different colors.

- Follow the information on the next section of slides
- Learn about RGB (red, green, blue)
- See how to use RGB to display any color
- Then use RGB in your remix

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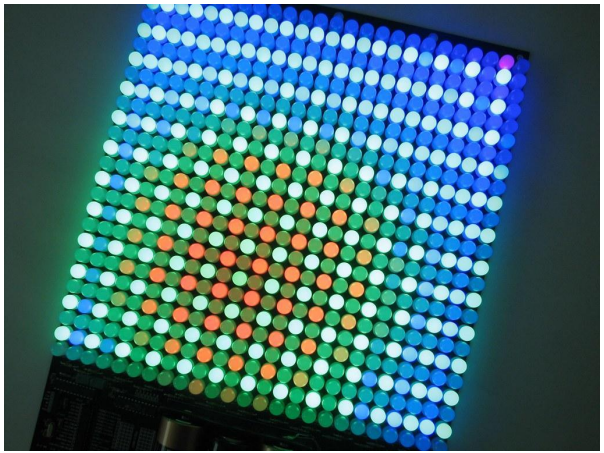
# CodeX and RGB

Setting pixels to any color using RGB tuples

# What is RGB?



RGB stands for Red, Green, Blue.

Find out more by watching one of the short videos on the next slides.

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# Code.org video on pixels

Watch from

0:45 to 2:35


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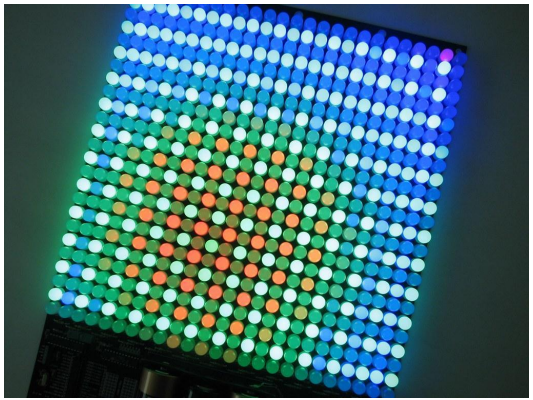
# Getting RGB values

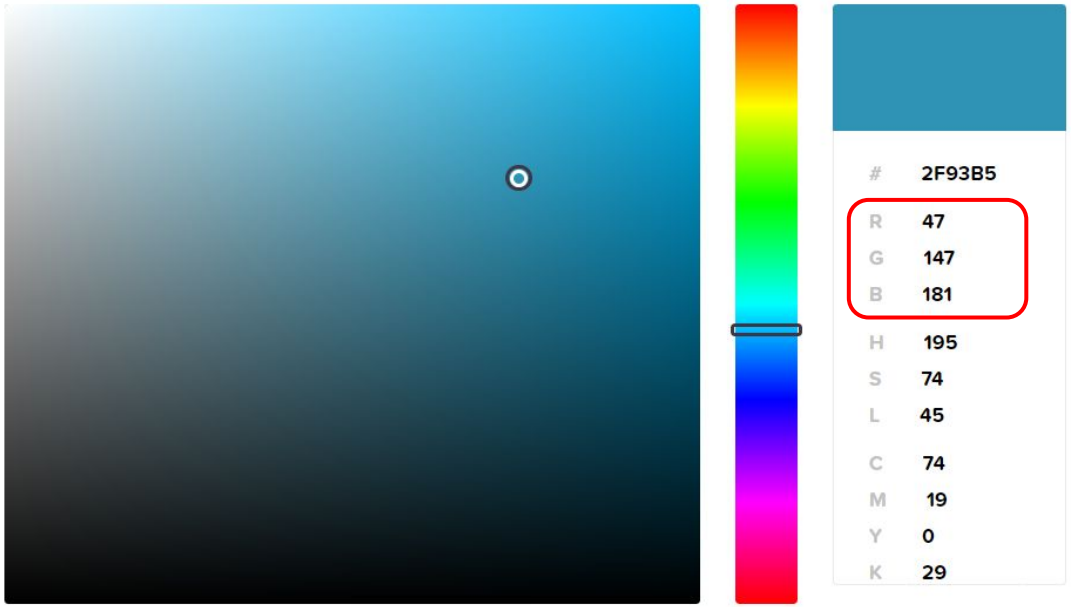


The video mentions “triplets” of numbers. Each number in the triplet represents a value in RGB.

= ( 47, 147, 181)

- The first number is the amount of red
- The second number is the amount of green
- The third number is the amount of blue

# Getting RGB values




Use online software to select a color and find the RGB colors.

( 47, 147, 181)

- In Python, the triplet is called a “tuple”

Online color picker: https://htmlcolorcodes.com/color-picker/

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# Using RGB values

Set your own colors by changing the color value to a tuple instead of a built-in color:

color = (47, 147, 181)

```
delay = 1
color = (47, 147, 181)
pixels.set(0, color)
pixels.set(1, color)
pixels.set(2, color)
pixels.set(3, color)
```

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# Using RGB values

You can also assign each pixel their own color by using the tuple in the pixels.set() function

```
sleep(delay)
pixels.set(0, (219, 31, 58))
pixels.set(1, (236, 213, 80))
pixels.set(2, (15, 42, 163))
pixels.set(3, (231, 61, 238))
```

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# Challenge: Random RGB values

If you want to try something new, generate random numbers for R, G and B and see what color happens!

Everytime you run the code, or add the code multiple times,  you should get a different color.

```
from codex import *
from time import sleep
from random import randrange

delay = 1
red = randrange(256)
green = randrange(256)
blue = randrange(256)
color = (red, green, blue)
pixels.set(0, color)
pixels.set(1, color)
pixels.set(2, color)
pixels.set(3, color)
sleep(delay)
```

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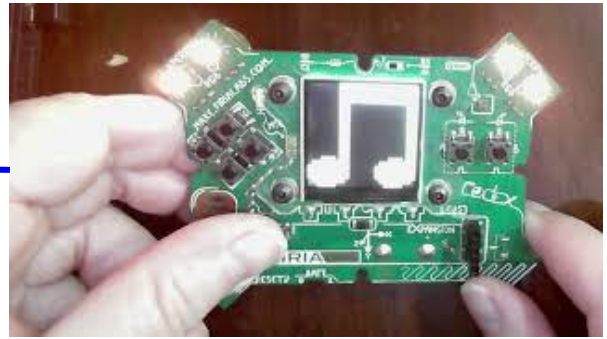
# Step #2 Remix Ideas

## Mild

Select an RGB color for all four pixels **and** display an image. After a short delay, select a different RGB color and image. Repeat as many times as you want. Slide 14 can help you.



## Medium

Light all pixels with an RGB color. Then turn off the pixels and display an image. Then clear the screen and light the pixels with another RGB color. Repeat as many times as you want.

*Hint: use display.clear() and pixels.set(#, BLACK)*

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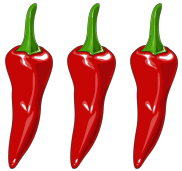
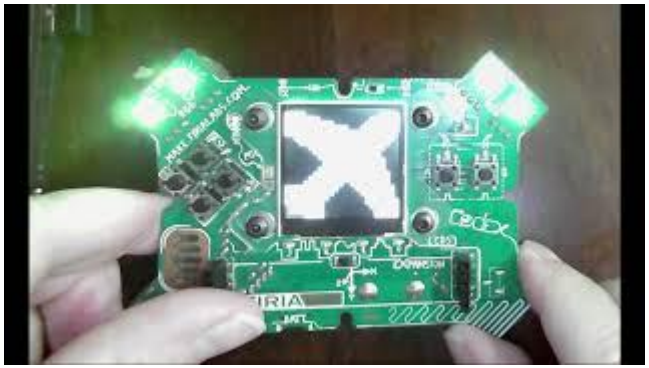
# Step #2 Remix Ideas



## Spicy

Use one of the ideas from Mild or Medium, but instead of using an RGB color that you chose, use random colors. Slide 16 can help you.

Mild with random colors



Medium with random colors

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# Step #2

## Brainstorm ideas

- Read through remix suggestions from your teacher (previous slides)
- Use your creativity to come up with your own idea for a project
- How can you use RGB colors in your remix project?
- Decide with your partner what project you will do

DO THIS:

- Fill out the information in the Mission 3 Remix Log for **Step #2**

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# Step #3

## Make a plan

- What variables will you need?
- What colors will you use?
- What images will you display?

DO THIS:

- Fill out the information in the Mission 3 Remix Log for **Step #3**

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# Step #4

## Code your project

- **IMPORTANT:** Go to the sandbox to code the remix project 
  - Above toolbox in the lower left corner
- Start with a new file and give it a descriptive name (**Remix3**)
- You can leave **Heart1** and **Pixels1** open (Use them as a guide)
- Import your modules
- Define your variables
- Write your code, testing frequently

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# Step #4

## Stop and test frequently!

- Don’t try to write all the code at one time
- Mistakes happen, so find them early
- Type just a few lines of code and then run the program
- If there is an error, fix it before continuing
- Use the debugger and your other programs for help

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# Step #5

## Documentation!

- Make sure your code is readable by adding blank lines
- Add comments to sections of your code that explain what they do

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# Step #5

## Get feedback

- Show your code to other students
- What do they think? Have them fill out the feedback form on your Mission 3 Remix Log
- Give yourself some feedback Is there something you want to change or improve or add? Fill out the feedback form on your Mission 3 Remix Log

## Modify your code to make your project even better

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# And now you have your own remix!

## Congratulations!

By completing this remix you have:

- learned more about programming
- used skills and concepts from the missions
- been thinking! And problem solving and much more!

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# Post-Mission Reflection

- Wow! Great job!
- Share your project with your friends!
- Complete the Mission 3 Remix Log

- Don’t forget to clear your CodeX by running your **Clear** program